

REMARKS

Claims 1-9, 12, 14, 16-17, 22-23, 25-34, 36-38, 40-42, 45-55 and 78-80 were pending in this application. Claims 10-11, 13, 15, 18-21, 24, 35, 39, 43-44, and 56-77 were previously canceled and claims 78-80 were previously added. Applicants respectfully request reconsideration of the claims.

Claims 1, 8-9, 12, 14, 16-17 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2004/0262683 A1 to Bohr, et al. ("Bohr") in view of U.S. Patent No. 6,674,100 B2 to Kubo, et al. ("Kubo"). Applicants respectfully traverse this rejection.

Examiner has stated, "Kubo was primarily cited to show that Si, Ge, and C were used to adjust the lattice constant of a semiconductor to a desired level. The applicant's materials of Si, Ge, and C are not novel since Kubo already teaches that these materials can adjust the lattice constant of the semiconductor." Applicants respectfully note that although Kubo teaches that the addition of germanium and carbon into silicon can adjust the lattice constant of silicon, there is no motivation or suggestion to adjust the lattice constant by adding *both* germanium *and* carbon. Column 10, lines 49-51 of Kubo recites "the lattice constant of Ge is greater by 4.2% than that of Si, and the lattice constant of C is smaller by 34.3% than that of Si." Therefore, it can be derived that to increase a lattice constant, Ge can be added, while to reduce a lattice constant, C can be added. However, adding Ge into SiC, or adding C into SiGe, will only reduce the effect of adjusting the lattice constant. Without the benefit of hindsight provided by Applicants' teaching, even though one skilled in the art wants to adjust the lattice constant of a semiconductor, he/she will have no motivation for adding both Ge and C into the semiconductor, as such an act will

obviously induce a smaller lattice mismatch than adding C only or Ge only, hence defeating the purpose of incurring high stresses in channel regions of transistors.

As a matter of fact, although Kubo shows that an additional third semiconductor layer may comprise an alloy of silicon, germanium, and carbon, the purpose for having the alloy of silicon, germanium, and carbon in Kubo is to prevent lattice mismatch from occurring (column 4, lines 26-45). However, in the present invention, the purpose of having an alloy of silicon, germanium, and carbon is to introduce lattice mismatch. Kubo, therefore, teaches away from claim 1. This further proves that there is no motivation for combining Kubo into Bohr. Claim 1 is thus allowable over Bohr in view of Kubo.

Claims 2, 6 and 7 were rejected under 35 U.S.C. § 103(a) as being as being unpatentable over Bohr in view of Kubo as applied to claim 1 above, and further in view of U.S. Publication No. 2004/0026765 to Currie, et al. ("Currie"). Applicants respectfully traverse the rejection.

Claims 2, 6 and 7 depend from claim 1, which has a feature of "a second semiconductor material comprising silicon (Si), germanium (Ge), and carbon (C)." As discussed in preceding paragraphs, Kubo provides no motivation or suggestion for adding *both* Ge *and* C into silicon in order to incur lattice mismatch, and thus there is no motivation for one of ordinary skill in the art to combine Kubo with Bohr and Currie. Therefore, claim 1 is patentable over Bohr in view of Kubo and further in view of Currie. Accordingly, claims 2, 6 and 7 are allowable over Bohr in view of Kubo and further in view of Currie by virtue of their dependence on claim 1 as well as for their respective further defining recitations.

Claims 3-5, 22 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bohr in view of Kubo as applied to claim 1 above, and further in view of U.S. Publication No. 2002/0125471 A1 to Fitzgerald, et al. ("Fitzgerald").

Claims 3-5, 22 and 23 depend from claim 1, which has a feature of "a second semiconductor material comprising silicon (Si), germanium (Ge), and carbon (C)." As discussed in preceding paragraphs, Kubo provides no motivation or suggestion for adding *both* Ge *and* C into silicon in order to incur lattice mismatch, and thus there is no motivation for one of ordinary skill in the art to combine Kubo with Bohr and Fitzgerald. Therefore, claim 1 is patentable over Bohr in view of Kubo and further in view of Fitzgerald. Accordingly, claims 3-5, 22 and 23 are allowable over Bohr in view of Kubo and further in view of Fitzgerald by virtue of their dependence on claim 1 as well as for their respective further defining recitations.

Claims 26-34 and 36-55 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,256,239 B1 to Akita, et al. ("Akita") in view of Currie and Kubo. Applicants respectfully traverse the rejection.

Claim 26 has the limitation of a "second semiconductor material comprising silicon (Si), germanium (Ge), and carbon (C)." As discussed in preceding paragraphs, Kubo provides no motivation or suggestion for adding *both* Ge *and* C into silicon in order to incur lattice mismatch, and thus there is no motivation for one of ordinary skill in the art to combine Kubo with Akita and Currie. Claim 26 thus is allowable over Akita in view of Currie and Kubo.

Claims 27-34 and 36-55 depend directly or indirectly from claim 26. Therefore, claims 27-34 and 36-55 are allowable over Akita in view of Currie and Kubo by virtue of their dependence on claim 26 as well as for their respective further defining recitations.

Claims 78-80 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Currie in view of Chen and Kubo. Applicants respectfully traverse this rejection.

Claim 78 has the limitation of a "second semiconductor material comprising silicon (Si), germanium (Ge), and carbon (C)." As discussed in preceding paragraphs, Kubo provides no motivation or suggestion for adding both Ge and C into silicon in order to incur lattice mismatch, and thus there is no motivation for one of ordinary skill in the art to combine Kubo with Chen. Claim 78 is thus allowable over Akita in view of Chen and Kubo.

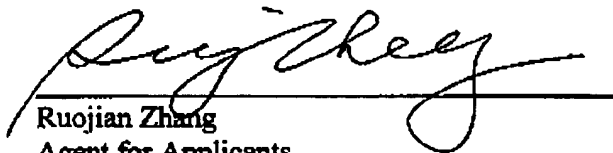
Claims 79-80 depend from claim 78. Therefore, claims 79-80 are allowable over Akita in view of Chen and Kubo by virtue of their dependence on claim 78 as well as for their respective further defining recitations.

In view of the above, Applicants respectfully submit that this response complies with 37 CFR § 1.116 and should therefore be entered, and with said entry that the application is in condition for allowance. No new matter has been added by this response. Please charge any fees or credit any overpayments to Deposit Account No. 50-1065. If the Examiner has any questions or other correspondence regarding this application, Applicants request that the Examiner contact the Applicants' Agent at the below listed telephone number and address.

Respectfully submitted,

08/16/2006

Date


Ruojian Zhang
Agent for Applicants
Reg. No. 54,695

Slater & Matsil, L.L.P.
17950 Preston Rd., Suite 1000
Dallas, Texas 75252-5793
Tel. 972-732-1001
Fax: 972-732-9218

TSM03-0670

Page 5 of 5